

True/False/Not given Statements from given passages

Passage – 1:

In 1993 more than a million saiga antelope (*Saiga tatarica*) crowded the steppes of Central Asia. However, by 2004 just 30,000 remained, many of them female. The species had fallen prey to relentless poaching – with motorbikes and automatic weapons – in the wake of the Soviet Union’s collapse. This 97% decline is one of the most dramatic population crashes of a large mammal ever seen. Poachers harvest males for their horns, which are used in fever cures in traditional Chinese medicine. The slaughter is embarrassing for conservationists. In the early 1990s, groups such as WWF actively encouraged the saiga hunt, promoting its horn as an alternative to the horn of the endangered rhino. “The saiga was an important resource, well managed by the Soviet Union,” says John Robinson, at the Wildlife Conservation Society (WCS) in New York City, US. “But with the breakdown of civil society and law and order, that management ceased.”

Are the following statements true, false or not given?

1. In the early nineties Central Asia’s steppes was home to over one million saiga.
2. This 97% decline is the most dramatic population crash of a large mammal ever seen.
3. Traditional medicine uses the poached horns of male members of the group.
4. The WWF managed to save many rhinos because it encouraged the hunting of saiga.

Passage – 2:

Researchers often insert a gene or two into an organism in order to make it do something unique. For example, researchers inserted the insulin gene into bacteria in order to make them produce human insulin. However, researchers at the J. Craig Venter Institute (JCVI) in Rockville, MD, have now created organisms that contain a completely synthetic genome. This synthetic genome was designed by computer, resulting in the “first self-replicating species ... whose parent is a computer,” as stated by Dr. Venter, the lead scientist on this project.

In essence, the JCVI scientists took the genome of one bacterial species, *M. mycoides*, synthesized it from scratch, and then transplanted it into a different bacterial species, *M. capricolum*. The DNA was synthesized as a series of cassettes, or pieces, spanning roughly 1,080 bases (the chemical units that make up DNA) each. These cassettes were then painstakingly assembled together and slowly input into the *M. capricolum* species.

The JCVI researchers also included several “watermarks” in the synthetic genome. Because DNA contains introns, which are non-expressed spans of DNA, as well as exons, which are expressed spans of DNA, much of the code can be altered without affecting the final organism. Also, the four bases of the DNA code – A,C,G, and T – can combine into triplets to code for 20 amino acids (the chemical units of which protein is composed), as well as start and stop instructions for gene expression. These amino acids are designated by single alphabetical letters; for example, tryptophan is designated by the letter W. Thus, by using the amino acid “alphabet,” the JCVI researchers were able to insert sequences of DNA that were specifically designed to spell out the names of study authors, project contributors, web addresses, and even include quotations from James Joyce, and Richard Feynman. Such engineering helped clarify that the *M. capricolum* genome is completely synthetic and not a product of natural bacterial growth and replication.

Over one million total bases were inserted into *M. capricolum*. The final result was a bacterial cell that originated from *M. capricolum*, but behaved like and expressed the proteins of *M. mycoides*. This synthetic *M. mycoides* bacterium was also able to self-replicate, a fundamental quality of life. 71

The demonstration that completely synthetic genomes can be used to start synthetic life promises other exciting discoveries and technologies. For example, photosynthetic algae could be transplanted with genomes that would enable these organisms to produce biofuel. In fact, the ExxonMobil Research and Engineering Company has already worked out an agreement with Synthetic Genomics, the company that helped fund the JCVI research team, to start just such a project.

While some researchers agree that the technical feat of the JCVI team is astounding, detractors point to the difficulty of creating more complicated organisms from scratch. Other researchers point to the fact that some biofuels are already being produced by microorganisms via the genetic engineering of only a handful of genes. And Dr. David Baltimore, a leading geneticist at CalTech, has countered the significance of the work performed by the JCVI research team, stating that its lead researcher, Dr. Venter, "... has not created life, only mimicked it."

Are the following statements true, false or not given?

1. DNA was also injected into animals.
2. Bacteria have been made to produce insulin.
3. Tryptophan is one example of an amino acid.
4. Bacteria were taught to spell.
5. Fuel is already being produced using genetically altered algae.
6. The research team gave money to ExxonMobil.
7. The synthetic bacteria can only replicate for several generations

Passage 3:

Hell Creek is heaven for palaeontologists. The Montanan wildlife refuge is rife with clay and stones that hold clues to our prehistoric past. It was in Hell Creek that researchers from the University of Kansas recently stumbled on the remains of a young Tyrannosaurus rex—they think.

Fossils from various periods have been found there, and this isn't the first T. Rex fossil to be found, but University of Kansas scientists think it could be one of the most intact. The entire fossil remains of the upper part of the dinosaur's jaw, with all its teeth, was found. Palaeontologists dug up parts of a skull, foot, hips, and backbones. If the remains do in fact belong to a T. rex, that would make them around 66 million years old. Adding to the rarity of the find is the fact that the fossils may belong to a juvenile.

Further work will determine whether the team actually has a T. Rex on their hands, or possibly a Nanotyrannus, a tiny genus of tyrannosaur that's a matter of scientific debate. Many palaeontologists think that so-called Nanotyrannus fossils are actually juvenile T. Rex specimens.

Are the following statements true, false or not given?

1. Researchers have discovered a new fossil in Hell Creek, Montana.
2. It is thought that the unearthed bones belong to a mature Tyrannosaurus rex.
3. Some palaeontologists doubt whether the Nanotyrannus actually existed.

Passage 4:

By the beginning of the 15th century, after a hundred years of construction, Florence Cathedral was still missing its dome. The building required an octagonal dome which would be higher and wider than any that had ever been built, with no external buttresses to keep it from spreading and falling under its own weight.

The building of such a masonry dome posed many technical problems. Filippo Brunelleschi, who is now seen as a key figure in architecture and perhaps the first modern engineer, looked to the great dome of the Pantheon in Rome for solutions. The dome of the Pantheon is a single shell of concrete, the formula for which had long since been forgotten. Soil filled with silver coins had held the Pantheon dome aloft while its concrete set. This could not be the solution in the case of the Florence Cathedral dome, due to its size. Another possible solution, the use of scaffolding, was also impractical because there was not enough timber in the whole of the region of Tuscany.

Brunelleschi would have to build the dome out of brick, due to its light weight compared to stone and being easier to form, and with nothing under it during construction. His eventual success can be attributed, in no small degree, to his technical and mathematical genius. Brunelleschi used more than four million bricks to create what is still the largest masonry dome in the world.

Are the following statements true, false or not given?

1. For many years, people had believed that construction of such a huge dome would be impossible.
2. The architect Brunelleschi employed a building method that had previously been used by the Romans.
3. Brunelleschi was not able to use wooden scaffolding when building the dome.
4. The Cathedral's dome is still the biggest of its kind.

Passage – 5:

In a recent study published in the journal *Medicine & Science in Sports & Exercise*, researchers looked at 10 pairs of male identical twins in their 30s. Each twin was similar to his brother in most ways, right down to their eating habits—except that one in each pair had stopped exercising regularly in adulthood.

Despite the fact that the less active twins had the exact same DNA as their fit brothers, after just three sedentary years, they had begun to develop insulin resistance (a precursor to diabetes), had more body fat and lower endurance—and, perhaps most notably, had less grey matter in the brain regions responsible for motor control and coordination. While the study was small, it is evidence that exercise may have as large an effect on your health as your genes do.

(Source: *Time* magazine)

Are the following statements true, false, or not given?

1. The twins in the study were very similar, but they had different diets.
2. The fitter twins had less body fat than their brothers.
3. The less active twins performed badly in tests of coordination.
4. The size of the study means that no conclusions can be drawn.

The Saiga Antelope

1. TRUE 2. NOT GIVEN 3. TRUE 4. NOT GIVEN

Have Researchers Created Synthetic Life

1. NOT GIVEN 2. TRUE 3. TRUE 4. FALSE 5. FALSE 6. FALSE 7. NOT GIVEN